# Image-Based CAPTCHAs for Website Security

**ID# 2005-3125**

Imaged-based CAPTCHA example

## Technology Summary

A system for the generation of attack-resistant, user-friendly, image-based CAPTCHAs. Controlled distortions are produced on randomly chosen images and present them to the user in the form of a mosaic. The images are distorted in a way that precludes the use of state-of-the-art computer image recognition technologies. In a preferred implementation of our technology, we use a two step verification process. In the first step, the user clicks near the center of any picture in the mosaic. In the second step, the user is asked to identify a distorted image by selection from a list. This two-round click-and-annotate process makes the CAPTCHA user friendly and very effective.

## Application & Market Utility

Most current CAPTCHAs are text-based, however text-based CAPTCHAs are increasingly being broken into by using automated computers using object-recognition techniques with high accuracies. This tehnology counters this method with a simple click-based system with no typing necessary and no hard to read text generated.

## Next Steps

Seeking research collaboration and licensing opportunities.

**TECHNOLOGY READINESS LEVEL** 4-7

**Seeking**

Investment | Licensing | Research

**Keywords**

- CAPTCHAs
- Web security
- Internet authentication
- automated Turing test
- image retrieval


**Researchers**

**James Z. Wang**
Professor of Information Sciences and Technology
Online Bio
Website

**Jia Li**
Professor of Statistics
Website

**Ritendra Datta**
Ph.D. in Computer Science and Engineering
Website

**Originating College**
Eberly College of Science

**Office of Technology Management Contact**
Swope, Bradley
bas101@psu.edu
814-863-5987